



WEEKLY OVERSIGHT REPORT

CH2MHILL**Weekly Summary Report
USEPA Oversight, Sauget Area 1, Sauget, IL
WA No. 239-RSBD-054V / Contract No. 68-W6-0025****Week Ending Friday May 21, 2004**

This report summarizes the Remedial Investigation/Feasibility Study (RI/FS) fieldwork conducted by Monsanto, Solutia and their contractors from May 15 through May 21, 2004 at Sauget Area 1 Sites. The current RI/FS work consists of a dense non-aqueous phase liquid (DNAPL) Characterization and Remediation Study. CH2M HILL provided field oversight of work between May 15 and May 21, 2004.

Contractors Onsite

Golder Associates (consultant for Monsanto/Solutia)
Groundwater Services Inc. (contractor for Monsanto/Solutia)

Work Performed This Week

Groundwater Services Inc. (GSI) was onsite during the week conducting the DNAPL and light non-aqueous phase liquid (LNAPL) survey of existing wells at Sauget Area 1. This phase of work is part of Task 2 of the GSI Work Plan for the DNAPL Characterization and Remediation Study. Additionally, NAPL recovery tests and analysis, Task 5 of GSI Work Plan, were performed later in the week at one well where non-aqueous phase liquid (NAPL) was observed.

NAPL Survey at Existing Wells

Twenty-nine existing monitoring wells, located across Area 1, were surveyed for DNAPL and LNAPL during the week. Of these wells, measurements could not be collected at well P2-A-D due to well damage. Additionally, well EEG-106 was not measured because the stainless steel well cap could not be removed. This well will be revisited at a later date. Well EEG-104 could not be located on May 15, 2004. From a review of available site maps and direct field observations, it appears that the well lies within the footprint of the existing Toxic Substances Control Act (TSCA) cell. It is presumed that the well was abandoned during the construction of the TSCA cell.

The DNAPL and LNAPL survey consisted of the following measurements at each well:

- An oil-water interface probe was used to measure depth to LNAPL and/or DNAPL, the depth to water, and the total well depth.
- A weighted cotton string was dropped to the bottom of the well, then removed and inspected for evidence of staining (which if present could be indicative of NAPL).
- A Teflon bailer was lowered through the top of the water column present inside the well. The bailer was then raised from the well and inspected for the presence of a sheen or LNAPL.

- A Teflon bailer was lowered to the total depth of the well bailer. The bailer was then retrieved and visually observed for presence of a sheen or DNAPL.

Table 1 shows a comprehensive list of all wells included in the NAPL survey, and the results from wells surveyed through May 21, 2004. Some shallow wells were above the current water table and considered dry.

The oil-water interface probe indicated the presence of NAPL at four existing wells (BR-G, BR-H, BR-I, and EE-11). Additionally, staining was evident on the probe at three out of four wells. At well BR-H, a tone change was noted at approximately 110 feet below top of casing (BTOC), yet the weighted cotton string and bailer test showed no evidence of NAPL.

Using the cotton weighted string, staining was evident at three wells (BR-G, BR-I, and EE-11). Table 1 provides the approximate thickness of NAPL staining. The string at wells BR-G and BR-I was not completely stained throughout the profile, and the NAPL did not adhere continuously to the string. At well EE-11, the cotton string was completely stained throughout the 9 feet.

NAPL was observed in the Teflon bailer at three wells (BR-G, BR-I, and EE-11). Observations of the bailer are presented in Table 1. Well EE-11 had NAPL present at the liquid surface. A bailer was not lowered to the bottom of this well since the string test and first bailer test observed NAPL. Recovery tests were performed on this well to differentiate between a LNAPL or DNAPL, as described below. Even though wells BR-G and BR-I had less than 0.5 feet of NAPL in the well, recovery tests were still performed to better characterize the volume and type of NAPL present.

NAPL Recovery Tests

Three wells (BR-G, BR-I, and EE-11) were purged to begin the recovery test. If NAPL was observed while purging, the following tests were performed to characterize the recovered NAPL:

1. Collection of four one-liter samples and four 10-mL vials of NAPL for:
 - a) laboratory analysis of physical properties and chemical composition
 - b) bench-scale treatability testing.
2. Field density and viscosity tests.
3. Qualitative observations of wetability by spreading the NAPL over glass beads, gravel, and sand in separate beakers.

While purging wells BR-G and BR-I, no visual evidence of NAPL was observed, therefore recovery testing was not performed on these wells. Only well EE-11 had recovery tests performed.

At well EE-11, three one-liter amber bottles were filled approximately 75 percent full and four 10-mL vials were collected and stored in a cooler with ice. The field test for density, using a hydrometer, approximated the specific gravity of LNAPL to be 0.94. Additionally, a dip test was performed for viscosity, resulting in an average of 52 seconds (see picture). GSI will use the temperature of the LNAPL and time to empty the dip cup to determine the field viscosity. The LNAPL was poured over three beakers filled with gravel, sand, and glass beads to test for wetability. The LNAPL migrated to the bottom of the beaker and did not adhere to the objects. Pictures of the beakers are provided at the end of this report.

Work Anticipated Next Week

No work is scheduled for next week. The next field activities are scheduled to begin during the week of June 7 and will consist of 3-D seismic surveying and piezometer installation. The seismic survey will collect data from a truck-mounted Vibroseis system using geophones and cables while passing over a grid. The number and location of piezometers will be evaluated based upon the DNAPL survey and recovery tests performed this week.

TABLE 1

DNAPL Survey of Existing Wells, Oversight of Field Measurements for the week ending May 21, 2004

Site	Well ID	Historical DNAPL Thickness (feet)	Date Surveyed	NAPL Observations	Comments
Site G	BR-G		5/17/04	No LNAPL detected in bailer. ~4 feet DNAPL stained on weighted string. A sheen was noted at bottom of bailer lowered the total depth of well.	This well was pumped later. No LNAPL or DNAPL was recovered.
	EE-05		5/15/04	None detected	
	EEG-101	9.19	5/15/04	None detected	
	EEG-102	9.20	5/15/04	None detected	
	EEG-104	12.73			Well could not be located. Located within footprint of existing TSCA cell.
	EEG-106	10.35	5/15/04	Not measured	The stainless steel cap could not be removed. The well will be measured later.
	EEG-107	18.54	5/15/04	None detected	
	EEG-112	11.04	5/14/04	None detected	
	ST-G-S		5/19/04	None detected	Well dry
	ST-G-M		5/19/04	None detected	
	ST-G-D		5/19/04	None detected	
Site H	BR-H		5/17/04	None detected	A tone change was noted from the oil/water interface probe at ~110' BTOC with the total depth of well being ~117' BTOC. However, the weighted string and bailer showed no evidence of staining or DNAPL. No odors were observed.
	EE-01	23.29	5/17/04	None detected	
	EE-03	20.78	5/17/04	None detected	
	EE-04	8.44	5/20/04	None detected	
	EEG-110	13.14	5/17/04	None detected	
	P2-C-S	1.96	5/13/04	None detected	
	P2-C-M	3.45	5/13/04	None detected	
	P2-C-D	0.26	5/13/04	None detected	
	ST-H-S		5/17/04	None detected	Well dry
	ST-H-M		5/17/04	None detected	
	ST-H-D		5/17/04	None detected	

TABLE 1

DNAPL Survey of Existing Wells, Oversight of Field Measurements for the week ending May 21, 2004

Site	Well ID	Historical DNAPL Thickness (feet)	Date Surveyed	NAPL Observations	Comments
Site I	BR-I		5/17/04	No LNAPL detected. ~6.5 feet DNAPL stained on weighted string. ~3 feet DNAPL collected in bailer. ~10 feet DNAPL stained on oil/water interface probe.	This well was re-surveyed on 5/20/04. Again, no evidence of LNAPL was found. ~9.5' of staining evident on weighted cotton string. Water recovered in Teflon bailer lowered through total depth of well was clear, yet the outside of the Teflon bailer was coated with NAPL (See picture). When the well was pumped, no NAPL was observed.
	EE-20	14.88	5/17/04	None detected	
	P1-A-S	1.88	5/14/04	None detected	Well dry. P1-A cluster first surveyed by GSI on 5/10/04, resurveyed with EPA oversight on 5/14/04
	P1-A-M	3.29	5/14/04	None detected	
	P1-A-D	3.33	5/14/04	None detected	
	P1-B-S	1.97	5/14/04	None detected	Well dry
	P1-B-M	3.80	5/14/04	None detected	
	P1-B-D	0.56	5/14/04	None detected	
	P1-C-S	0.17	5/14/04	None detected	Well dry
	P1-C-M	3.96	5/14/04	None detected	
	P1-C-D	0.81	5/14/04	None detected	
	ST-I-S		5/17/04	None detected	
	ST-I-M		5/17/04	None detected	
	ST-I-D		5/17/04	None detected	
Site L	EEG-108	19.38	5/13/04	None detected	
	EEG-109	11.87	5/13/04	NA	Well Damaged, bent at ground surface, refusal of oil-water interface probe at bend in well.
Sites M or N	P2-A-S	None	5/15/04	None detected	
	P2-A-M	3.64	5/15/04	None detected	
	P2-A-D	6.69	5/15/04	NA	Well Damaged, bent at ground surface, refusal of oil-water interface probe at bend in well.
	P2-B-S	None	5/15/04	None detected	
	P2-B-M	None	5/15/04	None detected	

TABLE 1

DNAPL Survey of Existing Wells, Oversight of Field Measurements for the week ending May 21, 2004

Site	Well ID	Historical DNAPL Thickness (feet)	Date Surveyed	NAPL Observations	Comments
Sites M or N (cont'd)	P2-B-D	None	5/15/04	None detected	
	P3-A-S	1.55	5/13/04	None detected	Well dry
	P3-A-M	3.67	5/13/04	None detected	
	P3-A-D	3.79	5/13/04	None detected	
	P3-B-S	2.71	5/13/04	None detected	
	P3-B-M	3.24	5/13/04	None detected	
	P3-B-D	None	5/13/04	None detected	
	P3-C-S		5/14/04	None detected	
	P3-C-M		5/14/04	None detected	
	P3-C-D		5/14/04	None detected	
	ST-N-S		5/14/04	None detected	Well broken – surface
	ST-N-M		5/14/04	None detected	
	ST-N-D		5/14/04	None detected	
	EE-11	Full depth	5/17/04	NAPL noted in bailer through surface testing. ~9 feet NAPL stained on string. ~10 feet NAPL stained on oil/water interface probe.	Did not lower bailer to total depth of well because string was stained throughout profile. Depth to NAPL was ~14' BTOC. Tone changed ~17' BTOC. Total depth of well was ~23' BTOC.

Notes:

Historical DNAPL Thickness – Taken from Table 4-0c, US Army Corps of Engineers Report, compiled from field notes 1999-2000.

NA = Not Available/Not Measured

TABLE 2

Purging Suspected NAPL Wells for the week ending May 21, 2004

Well ID	Date Surveyed	Time Purged	Volume Purged	NAPL Observations
BR-G	5/20/04 @ 0920	~ 15 minutes	5 gallons	No sheen, some suspended sediment, very slight petroleum odor
BR-I	5/20/04 @ 1120	~ 20 minutes	4 gallons	No sheen, clear, little suspended sediment
BR-I	5/20/04 @ 1140 ^a	~ 20 minutes	4 gallons	No sheen, clear, little suspended sediment
EE-11	5/19/04 @ 1015	~60 minutes ^b	1.5 gallons	LNAPL, dark brown, petroleum odor ^c
EE-11	5/19/04 @ 1355	~ 25 minutes	0.5 gallons	LNAPL, dark brown, petroleum odor
EE-11	5/19/04 @ 1511	~ 15 minutes	0.25 gallons	LNAPL, dark brown, petroleum odor
EE-11	5/20/04 @ 1500	~ 40 minutes	5.5 gallons	LNAPL, dark brown, petroleum odor

Note:

^a Re-positioned tubing approximately 8 feet from bottom of well.^b The well was not pumped continuously due to the collection of samples for laboratory analysis.^c With time, the water recovered and became clear with some suspended solids.

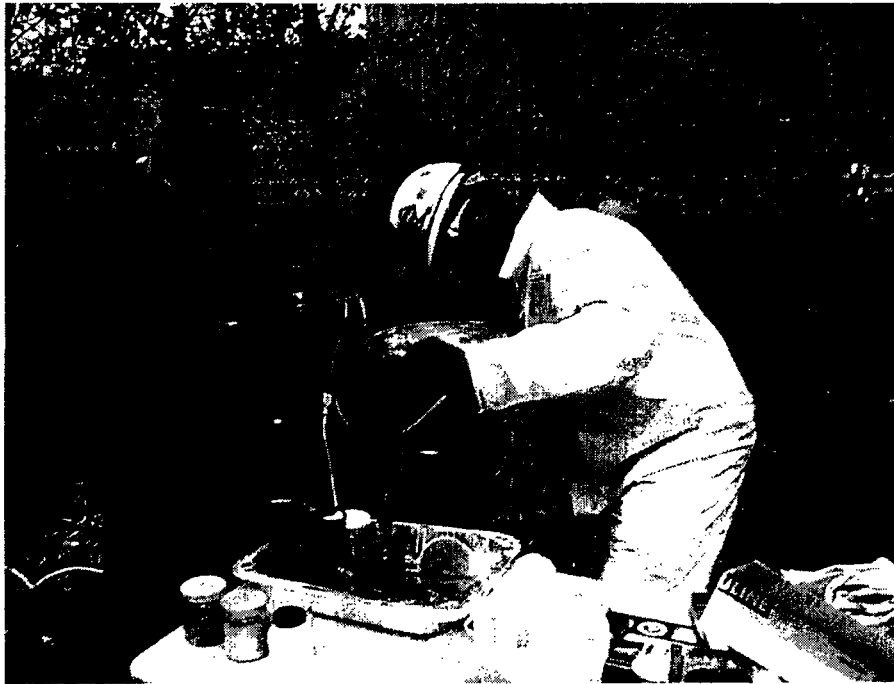
Photos from May 15, through May 21, 2004:



Well BR-H contained no visible signs of DNAPL in bailer (or staining on string), yet oil-water interface probe indicated ~7 feet of DNAPL at the bottom of well (May 17, 2004).



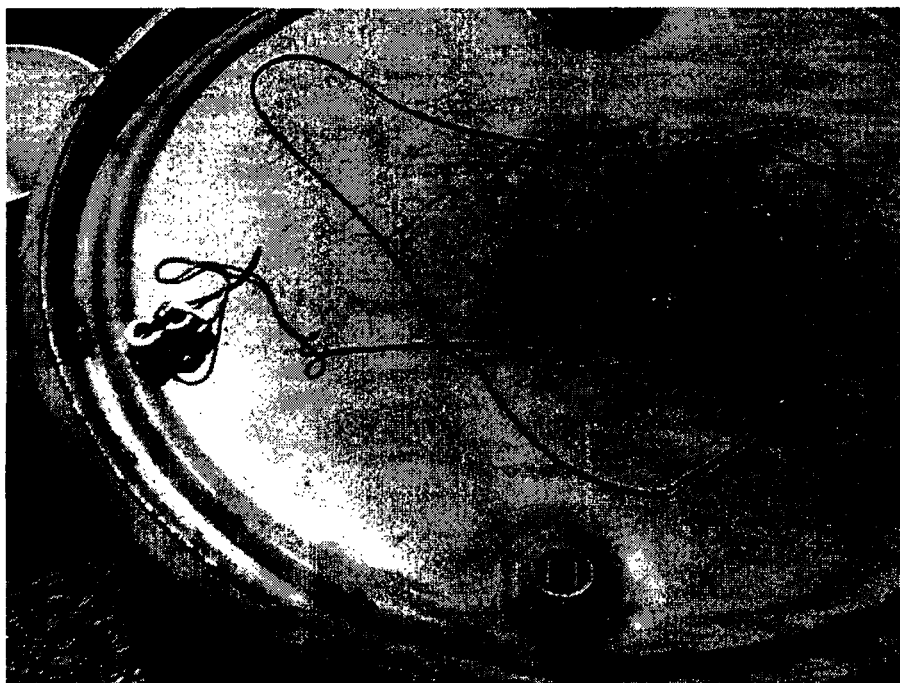
Collecting 1-Liter sample at Well EE-11 (May 19, 2004).



Performing dip cup test for viscosity at Well EE-11 (May 19, 2004).



LNAPL was poured over gravel containing gravel, glass beads, and sand at Well EE-11 on May 19, 2004. The picture was taken approximately 5 minutes after LNAPL poured.



Weighted cotton string test performed at well BR-I on May 20, 2004. Note the string is not as stained near the weights which was closer to the bottom of the well.



Emptied Teflon bailer at well BR-I. DNAPL was not observed within bailer, yet DNAPL coating outside of bailer (May 20, 2004).